

JPRS-UEQ-86-005
28 FEBRUARY 1986

USSR Report

ENGINEERING AND EQUIPMENT

TABLES OF CONTENTS

JPRS-UEQ-85-001, 10 JANUARY 1985-

JPRS-UEQ-85-004, 15 MAY 1985

19981109 120

DIGITAL QUALITY INFORMATION

FBIS

FOREIGN BROADCAST INFORMATION SERVICE

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service (NTIS), Springfield, Virginia 22161. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semimonthly by the NTIS, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

Soviet books and journal articles displaying a copyright notice are reproduced and sold by NTIS with permission of the copyright agency of the Soviet Union. Permission for further reproduction must be obtained from copyright owner.

10 January 1985

**USSR REPORT
ENGINEERING AND EQUIPMENT**

CONTENTS

MARINE AND SHIPBUILDING

Ergonomics and Design of Control Systems for Technical Equipment on Ships (G. Z. Zakharov; SUDOSTROYENIYE, No 2, Feb 84).....	1
Noise Control on Ships (E. L. Myshinskiy, L. P. Sedakov; SUDOSTROYENIYE, No 2, Feb 84).....	1
Requirements for Push-Button Control Posts of Deck Mechanisms (Ye. V. Lapenina, V. L. Khoze; SUDOSTROYENIYE, No 2, Feb 84).....	2
Efficiency of Noise Suppression by Sound Isolating Sheaths (V. N. Storozhev, A. P. Demyashev, et al.; SUDOSTROYENIYE, No 3, Mar 84).....	2
Optimization of Ship's Hull with Respect to Reduction of Metal Content and Assembly Labor (G. V. Boytsov; SUDOSTROYENIYE, No 3, Mar 84).....	3

NUCLEAR ENERGY

Substantiating Complex Ion Water Treatment Modes for Dual Loop Nuclear Electric Power Stations (A. S. Monakhov, V. A. Zverev, et al.; TEPLOENERGETIKA, No 2, Feb 84).....	4
--	---

NON-NUCLEAR ENERGY

Recuperative Control of Thermal Electric Power Station Feed Pumps (A. N. Turkin, B. G. Ruzhkovskiy; TEPLOENERGETIKA, No 2, Feb 84).....	5
--	---

Determination of Optimal Circulation Water Flow Rate in 800 MW Power Unit (L. B. Zusmanovich, V. I. Fedorov; TEPLOENERGETIKA, No 2, Feb 84).....	6
Study of Start-Up Thermal Status of Medium Pressure Rotor of K-200-130 Turbine of the Leningrad Metal Plant (I. G. Levit, R. M. Furman, et al.; TEPLOENERGETIKA, No 2, Feb 84).....	6
INDUSTRIAL TECHNOLOGY	
Specific Features of Automation of Production Process Operations in Machine Building Using Automatic Remote Controlled Industrial Robots (Yu. V. Podurayev; VESTNIK MASHINOSTROYENIYA, No 2, Feb 84).....	8
Influence of Anticorrosion Additive on Performance of a Friction Pair in Incombustible Hydraulic Fluid (V. I. Tolokonnikov, A. I. Berdenikov, et al.; VESTNIK MASHINOSTROYENIYA, No 2, Feb 84).....	9
Manipulator for Loading and Unloading Operations on an Overhead Conveyor (V. V. Molchanov, B. K. Onishchenko; VESTNIK MASHINOSTROYENIYA, No 2, Feb 84).....	9
Determination of Permissible Load on a Slip Bearing Based on Ultimate Stressed State of the Antifriction Material (I. A. Toder; VESTNIK MASHINOSTROYENIYA, No 2, Feb 84).....	10
Specific Features of Planetary Drive Configurations for Flex-Ring Gearing (Ye. N. Ivashov, M. I. Nekrasov; VESTNIK MASHINOSTROYENIYA, No 2, Feb 84).....	11
Problems in Designing Flexible Automated Production Systems (A. M. Voychinskiy; SUDOSTROYENIYE, No 2, Feb 84).....	11
Automation--Important Trend in Development of Complex Machine Systems (G. A. Zakharov, P. I. Paderno; SUDOSTROYENIYE, No 2, Feb 84).....	12
TURBINE AND ENGINE DESIGN	
Designing the Profile of Turbine Blades Using an Iteration Technique (G. A. Sokolovskiy, V. A. Vanin; PROBLEMY MACHINOSTROYENIYA, No 19, Nov 83).....	13

Calculating Secondary Nonviscous Gas Flows in Spatial Cascades of Turbines (V. I. Gnesin, V. G. Solodov; PROBLEMY MASHINOSTROYENIYA, No 19, Nov 83).....	14
Determination of Total Pressure Losses in Stepped Annular Diffusors with Curvilinear Outer Walls and Uniform Velocity Field at Inlet (A. Ya. Dantsyg, N. M. Petrov; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 3, Jul-Sep 83).....	15
Influence of Normalized Frequency on Time-Dependent Aerodynamic Characteristics of Vane Blading Profiles (V. I. Gnesin, S. V. Yershov; PROBLEMY MASHINOSTROYENIYA, No 19, Nov 83).....	15
Influence of Secondary Flow Rate on Dynamic Stresses in Turbine Rotor Blades (G. D. Shekun; TEPLOENERGETIKA, No 2, Feb 84).....	16
On One Design Principle of Surge Protector for Gas Turbine Engine Compressor (M. M. Shakir'yanov; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 3, Jul-Sep 83)....	17
On Selecting Bypass Mixers for Turbofan Engines (B. D. Fishbeyn; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No. 3, Jul-Sep 83)...	18
Influence of Setting Angle of Jet Cooling Nozzles on Temperature and Stress State of a Turbine Wheel (V. V. Zhuykov, Ye. I. Lashuk; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 3, Jul-Sep 83)....	18
Improvement of Gas Turbine Engine Performance by Water Injection Into Turbine Cooling Air (G. M. Gorelov, V. P. Danil'chenko, et al.; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 3, Jul-Sep 83).....	19
Experimental Study of Aerodynamic Shielding of Turbojet Engine Air Intake Against Exhaust Gases (M. M. Vysokogorets, M. Sh. Gilyazov, et al.; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 3, Jul-Sep 83).....	20
Experimental Study of Influence of Size of Upper and Lower Laps on Operational Efficiency of Centripetal Full-Inlet Air Driven Microturbines (N. P. Tikhonov, A. N. Tikhonov, et al.; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 3, Jul-Sep 83).....	21

Calculating Heat Transfer Coefficients for Turbine Profiles Taking Surface Curvature and Elevated Flow Turbulence Into Account (V. D. Sovershennyy, S. P. Chikova; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 3, Jul-Sep 83).....	21
Correction of Engraving Stamp for Forming Blanks of Gas Turbine Engine Blades (V. Yu. Zykov, A. F. Pavlov, et al.; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 3, Jul-Sep 83).....	22
Speed Governor for Diesel Engine (Ye. Kh. Kadyshevich, M. A. Miselev, et al.; SUDOSTROYENIYE, No 3, Mar 84).....	23
Use of Braking Stages for Control of Turbine Speed (Yu. M. Pogodin, A. M. Topunov, et al.; SUDOSTROYENIYE, No 6, Jun 84).....	23
NAVIGATION AND GUIDANCE SYSTEMS	
Experimental Satellite System for Determining Coordinates of Maritime Distress (I. S. Bronitskiy; SUDOSTROYENIYE, No 2, Feb 84).....	25
Hydroacoustic Navigation Devices on Undersea Vehicles (G. Ye. Smirnov, N. A. Tolstyakova; SUDOSTROYENIYE, No 5, May 84).....	26
Pneumatic Draft Gauge for Hydrofoil Ships (V. A. Lukashevskiy, L. B. El'kind, et al.; SUDOSTROYENIYE, No 4, Apr 84).....	26
High-Reliability Inclinograph (V. B. Dedukhov, M. I. Novoset'tsev; SUDOSTROYENIYE, No 3, Mar 84).....	27
Comparing Detection Capabilities of Ship Radars (V. Ts. Fridman, A. S. Polovodov; SUDOSTROYENIYE, No 6, Jun 84).....	27
New Stage in Development of Automatic Systems for Avoidance of Ship Collisions (Ye. B. Georgizon, G. I. Yavorskiy, et al.; SUDOSTROYENIYE, No 6, Jun 84).....	28

FLUID MECHANICS

On Vortex Transport in Turbine Channels
(A. A. Bykov; PROBLEMY MACHINOSTROYENIYA, No 19, Nov 83).... 29

Turbulent Jet Flow in a Channel With a Circulation Region
(G. A. Glebov, V. N. Petrov; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 3, Jul-Sep 83).... 30

On Limits of Applicability of Linear Models to Dynamics
of Gas Channels in Aircraft Engines
(A. V. Baykov; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 3, Jul-Sep)..... 30

Long Range Effect of Turbulent Pressure Pulsations in Plane-
Parallel Flows at Different Velocities With Various Flame Fronts
(G. N. Abramovich, V. B. Rutowskiy; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 3, Jul-Sep 83)..... 31

MECHANICS OF SOLIDS

Antifriction Nickel-Phosphorous Coatings on Aluminum Alloy
Products
(V. I. Latatuyev, G. N. Ganay; VESTNIK MASHINOSTROYENIYA, No 2, Feb 84)..... 32

Determination of Blade Service Life Under Irregular Loading
Conditions
(V. S. Sokolov, A. I. Lebedeva; TEPLOENERGETIKA, No 2, Feb 84)..... 32

On Solving Nonlinear Problems of Aircraft Structural
Mechanical Design
(S. K. Chernikov; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 3, Jul-Sep 83)..... 33

JPRS-UEQ-85-002

31 January 1985

USSR Report

ENGINEERING AND EQUIPMENT

TABLE OF CONTENTS

JPRS-UEQ-84-001, 9 February 1984-

JPRS-UEQ-84-007, 14 November 1984

FBIS

FOREIGN BROADCAST INFORMATION SERVICE

12 March 1985

USSR REPORT
ENGINEERING AND EQUIPMENT

CONTENTS

AERONAUTICAL AND SPACE

Periodic Movements of Axisymmetrical Satellite About Center
 of Mass Due to Gravitational Moment
 (V. V. Sazonov, M. Ye. Sidoryuk; INVESTIYA AKADEMII
 NAUK SSSR: MEKHANIKA TVERDOGO TELA, No. 3, May-Jun 84).... 1

Redesign of Fuselage Compartments by Method of Special Contours
 (F. K. Chistyakov, V. V. Naykhanov, et al.;
 IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY:
 AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84)..... 1

FLUID MECHANICS

Optimum Eddy Flow of Liquid Through Flow Tract of Hydroturbine
 (V. I. Klimovich, A. V. Fedorov; INVESTIYA AKADEMII
 NAUK SSSR: MEKHANIKA ZHIDKOSTI I GAZA, No 3, Mar 84).... 3

Propagation of Three-Dimensional Turbulent Jet From Lobar Nozzle
 Through Surrounding Stream
 (V. I. Vasil'yev, S. Yu. Krasheninnikov, et al.;
 IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY:
 AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84)..... 3

Time-Dependent Flow of Stream Swirled in Vortex Chamber
 (Yu. A. Knysh, A. F. Uryvskiy; IZVESTIYA VYSSHIKH
 UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1,
 Jan-Mar 84)..... 4

Natural Convection During Heat Accumulation by Substances
 With Change of Aggregate State
 (A. G. Chukayev, A. M. Kuks; IZVESTIYA VYSSHIKH UCHEBNYKH
 ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84)..... 5

Some Unique Features of Isenergic Flow of Gas Under High Pressures (A. P. Bebyakov, V. Ya. Levin; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84).....	5
Critical Height of Liquid Discharging From Container (N. M. Belyayev, V. Yu. Bezuglyy, et al.; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84).....	6
Determination of Boundary Line Between Reverse Jet and Surrounding Stream (I. G. Gataullin, D. V. Maklakov; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA No 1, Jan-Mar 84).....	7
Theoretical Basis for Experimental Study of Effect of Radiation on Natural Convection (L. I. Kudryashev, N. L. Men'shikh, et al.; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84).....	7
Method for Prompt Modeling of Quasiperiodic Movement of Solid Near-Axisymmetrical Body in Atmosphere (V. M. Belokonov, I. V. Belokonov, et al. INVESTIYA AKADEMII NAUK SSSR: MEKHANIKA TVERDOGO TELA, No 2, Feb 84).....	8
Flight Dynamics of Axisymmetrical Rotating Bodies in Air Medium (I. T. Borisenok, B. Ya. Lokshin, et al.; INVESTIYA AKADEMII NAUK SSSR: MEKHANIKA TVERDOGO TELA, No 2, Feb 84).....	8
Hypersonic Flow About Triangular Airfoil at Large Angles of Attack (V. N. Golubkin; PRIKLADNAYA MATEMATIKA I MEKHANIKA, No 3, May-Jun 84).....	9
Absolute Stability of Unsteady Movement of Axisymmetrical Rotating Flight Vehicle (V. I. Skorodinskiy; INVESTIYA AKADEMII NAUK SSSR: MEKHANIKA TVERDOGO TELA, No 3, May-Jun 84).....	9
HIGH ENERGY DEVICES, OPTICS, AND PHOTOGRAPHY	
Reflex Attachment for Line Alignment in Spectral Diffraction Devices (V. M. Kel'man, I. V. Rodnikova; INVESTIYA AKADEMII NAUK KAZAKHSKOY SSR: SERIYA FIZIKO-MATEMATICHESKAYA, No 6, Jun 83).....	10

Fast Electron Velocity Analyzer (N. N. Veniaminov, A. K. Kuzakov, et al.; PRIBORY I TEKNIKA EKSPERIMENTA, No 3, May-Jun 84).....	14
Ruby Wavefront-Conjugation Laser for Obtaining High Temperature Plasma (V. A. Boyko, G. A. Koldashov, et al.; PRIBORY I TEKHNika EKSPERIMENTA, No 3, May-Jun 84).....	14
Neodymium Yag Laser Pumped With Radiation From High Frequency Electrodeless Discharge (S. N. Golikova, P. S. Gusev, et al.; PRIBORY I TEKHNika EKSPERIMENTA, No 3, May-Jun 84).....	15
Variable Flexing Device for Targets in Internal Beams of Charged-Particle Accelerators (Ye. I. Rozum; PRIBORY I TEKHNika EKSPERIMENTA, No 2, Mar-Apr 84).....	16
System for Forming and Focusing High-Current Beam of Deuterium Ions (A. S. Belov; PRIBORY I TEKHNika EKSPERIMENTA, No 2, Mar-Apr 84).....	16
Dielectric Detector Device for Registering Heavy Cosmic Radiation Particles (Ye. V. Gorchakov, N. L. Grigorov, et al.; PRIBORY I TEKHNika EKSPERIMENTA, No 2, Mar-Apr 84).....	17
INDUSTRIAL TECHNOLOGY	
Parameters of Hydraulic Servomechanisms and Transient Characteristics of Gear Shifting (G. I. Lifshits; VESTNICK MASHINOSTROYENIYA, No 5, May 84).....	18
Flexural Stiffness and Losses on Internal Friction in Steel Ropes (V. A. Malinovskiy; VESTNICK MASHINOSTROYENIYA, No 6, Jun 84).....	18
Vibroabrasive Treatment of Parts Made of Electrical-Grade Steel (Yu. V. Dimov; VESTNICK MASHINOSTROYENIYA, No 6, Jun 84).....	19
New Technique for Fluid Feed in Simultaneous Multisurface Grinding (Ye. S. Kiselev, A. N. Unyanin, et al.; VESTNICK MASHINOSTROYENIYA, No 6, Jun 84).....	20

Effect of Zero-Wear in Friction Pairs Operating in Abrasive Media (M. V. Golub, V. I. Kharlamenko, et al.; VESTNICK MASHINOSTROYENIYA, No 5, May 84).....	21
Use of Ferrofluids in Machining of Metals (V. V. Podgorkov; VESTNICK MASHINOSTROYENIYA, No 6, Jun 84).....	21
Experimental Studies of Kinematic Accuracy of Flex-Ring Gearing in Vacuum (S. G. Borisov, S. N. Istomin; VESTNICK MASHINOSTROYENIYA, No 6, Jun 84).....	22
Stress-Strained State and Fatigue Strength of Triple Flex-Ring Power Gearing with Flexible Metal-On-Polymer Gears (A. G. Priymakov, V. I. Rudnitskiy; VESTNICK MASHINOSTROYENIYA, No 6, Jun 84).....	23
Cyclic Industrial Robots With Mechanical Energy Storing Devices: Multipositional System With One or Several Degrees of Freedom (A. I. Korendyasev, B. L. Salamandra, et al.; STANKI I INSTRUMENT, No 6, Jun 84).....	24
Design of Tightening Device and Calculation of Forces in Manipulator Transmissions With Base-Drive Mounted (A. G. Ovakimov, I. V. Kalabin, et al.; STANKI I INSTRUMENT, No 6, Jun 84).....	25
Optoelectronic Safety System for Robotized Technological Complex (S. G. Batrakov, Ye. M. Kanayev, et al.; STANKI I INSTRUMENT, No 5, May 84).....	25
Hydraulic Brakes for Industrial Robots (P. I. Knysh; STANKI I INSTRUMENT, No 5, May 84).....	26
Cyclic Industrial Robots With Mechanical Energy Storing Devices: Principles of Drive Design (L. M. Bolotin, A. I. Korendyasev, et al.; STANKI I INSTRUMENT, No 4, Apr 84).....	27
Theoretical Positive-Displacement Compressor Employing Injection of Non-Evaporating Liquid (V. Ye. Shcherba, V. L. Yusha, et al.; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: MASHINOSTROYENIYE, No 1, Jan 84).....	28
Assembly Robot Control Algorithms (P. D. Krut'ko, N. A. Lakota; IZVESTIYA VYSSHIKH UCHEBNY ZAVEDENIY: MASHINOSTROYENIYE, No 1, Jan 84).....	28

Calculation of Gas Forces Acting Upon Gate Element of Self-Actuating Piston Compressor Valve (G. A. Baryshnikov, V. P. Levshin; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: MASHINOSTROYENIYE, No 2, Feb 84)....	29
Engineering Design Method for Pulsator-Type Hydraulic Drive (V. N. Baranov; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: MASHINOSTROYENIYE, No 2, Feb 84).....	29
Balancing of Mechanism Masses. Static Balancing (L. V. Berestov; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: MASHINOSTROYENIYE, No 2, Feb 84).....	30
Transverse Rigidity of Flexible Gear in Flex-Ring Gearing (F. A. Shamsutdinov; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: MASHINOSTROYENIYE, No 2, Feb 84).....	30
Use of Vibration Mounts to Reduce Spatial Oscillations of Sealed Piston Compressors (V. V. Glodov, V. V. Karamyshkin; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: MASHINOSTROYENIYE, No 2, Feb 84)....	31
Calculation of Temperature Fields of Engine Parts With Reduced Heat Removal From Working Fluid (R. Z. Kavtaradze; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: MASHINOSTROYENIYE, No 3, Mar 84).....	31
Determination of Temperature Field in Antifriction Bearings With Two-Layer Insert (B. I. Ogarkov, S. P. Kukharenko; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: MASHINOSTROYENIYE, No 4, Apr 84)....	32
Calculation of Intermediate Pressure in Mathematical Model of Two-Stage Compressor (V. S. Yedemskiy, P. I. Plastinin; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: MASHINOSTROYENIYE, No 4, Apr 84)....	32
Calculation of Throughput Capacity of Slit in Annular Self-Actuating Valve of Piston Compressor (G. A. Baryshnikov, V. P. Vevshin, et al.; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: MASHINOSTROYENIYE, No 4, Apr 84).....	33
Vector Solution of Kinematics of Double Universal Joint (P. A. Lebedev, M. A. Pirozhkov; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: MASHINOSTROYENIYE, No 4, Apr 84)....	33

Forming of Surfaces Ground by Intermittent Abrasive Shells (V. S. Korsakov, V. G. Guzev; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: MASHINOSTROYENIYE, No 4, Apr 84)....	34
Device for Polishing Complex Surfaces With Constant Technological Force (Basteyev, V. I.; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: MASHINOSTROYENIYE, No 4, Apr 84).....	34
Superhigh Vacuum Oil-Less Apparatus With Fast Evacuation Cycle (K. D. Danilov, G. I. Il'in, et al.; PRIBORY I TEKNIKA EKSPERIMENTA, No 3, May-Jun 84).....	35
Technological Parameters of Deep Drawing by Pneumothermal Process (A. G. Pashkevich, A. V. Orekhov, et al.; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84).....	35
MECHANICS OF SOLIDS	
Time-Dependent Interaction of Internal Pressure Wave With System of Two Spherical Shells (Yu. V. Saprykin; PRIKLADNAYA MEKHANIKA, No 6, Jun 84)...	37
Interaction of Cylindrical Shell With Concentrated Mass Moving Along Its Inner Surface (N. S. Kondrashov; PRIKLADNAYA MEKHANIKA, No 6, Jun 84)...	37
Steady-State Reaction of Three-Layered Cylindrical Shell to Effect of Moving Load (V. I. Pozhuyev; PRIKLADNAYA MEKHANIKA, No 6, Jun 84)....	38
Investigation of Behavior of Stress-Strain State of Rolled Cylindrical Shell as Function of Overlap of Edges of Roll (N. A. Lovkova; PRIKLADNAYA MEKHANIKA, No 6, Jun 84).....	39
Determination of Stresses and Deformations in Linearly Elastic Conical Shell Subjected to Aerodynamic Loading and Heating (I. G. Muravskiy; PRIKLADNAYA MEKHANIKA, No 6, Jun 84)....	39
Dynamic Destruction of Current-Conducting Cylindrical Shell (V. R. Terrovere; PRIKLADNAYA MEKHANIKA, No 6, Jun 84)....	40
Stability of Three-Layer Glass-Reinforced Plastic Shells of Rotation (O. N. Ivanov, L. S. Orlovskiy, et al.; PRIKLADNAYA MEKHANIKA, No 6, Jun 84).....	40
Axisymmetrical Oscillations of Shell Systems Subjected to Impulse Loads (P. Z. Logovoy, V. N. Chaban; PRIKLADNAYA MEKHANIKA, No 6, Jun 84).....	41

Spectral Frequency of Eigenvalues in Optimal Problems of Stability of Cylindrical Shells of Variable Thickness (N. G. Medvedev, N. P. Totskiy; PRIKLADNAYA MEKHANIKA, No 6, Jun 84).....	41
Elasticity Formulas for Thin-Walled Shells With Piezoceramic Layers (V. I. Gololobov; PRIKLADNAYA MEKHANIKA, No 6, Jun 84)....	42
Investigation of Stability of Planar Rotation of Body Considering Dry Friction (K. I. Gulyayev, S. V. Dobroslavskiy; IZVESTIYA VYSSHIKH UCHEBНЫKH ZAVEDENIY: PRIBOROSTROYENIYE, No 3, Mar 84)...	42
Normal Mode Calculations for Fuselage-Type Intricate Structures by Regarding Them as Systems With Superposed Constraints (V. P. Borisov; IZVESTIYA VYSSHIKH UCHEBНЫKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84).....	43
Controlled Movement of Elastic Manipulator With Distributed Parameters (V. Ye. Berbyuk, M. V. Demidyuk; INVESTIYA AKADEMII NAUK SSSR: MEKHANIKA TVERDOGO TELA, No 2, Feb 84).....	43
Investigation of Dynamics of Manipulator With Elastic Sections (S. A. Mikhaylov, F. L. Shernous'ko; INVESTIYA AKADEMII NAUK SSSR: MEKHANIKA TVERDOGO TELA, No 2, Feb 84).....	44
Determination of Angular Position of Solid Body (A. A. Ilyukhin; INVESTIYA AKADEMII NAUK SSSR: MEKHANIKA TVERDOGO TELA, No 1, Jan 84).....	44
Calculation of Movement Parameters of Solid Body (D. V. Lebedev; INVESTIYA AKADEMII NAUK SSSR: MEKHANIKA TVERDOGO TELA, No 1, Jan 84).....	45
Problem of Angular Stabilization of Two-Legged Walking (P. S. Chudinov; INVESTIYA AKADEMII NAUK SSSR: MEKHANIKA TVERDOGO TELA, No 1, Jan 84).....	45
Controlling Movement of Jumping Apparatus in Flight Phase (V. V. Lapshin; INVESTIYA AKADEMII NAUK SSSR: MEKHANIKA TVERDOGO TELA, No 1, Jan 84).....	46
Region of Attraction in Problem of Planar Movement of Oscillating Systems (V. G. Verbitskiy, L. G. Lobas; PRIKLADNAYA MATEMATIKA I MEKHANIKA, No 3, May-Jun 84).....	46

Stability of Rotation of Solid Body About Vertical During Collisions With Horizontal Plane (A. P. Makeyev; PRIKLADNAYA MATEMATIKA I MEKHANIKA, No 3, May-Jun 84).....	47
Two Problems of Contact With Viscoelasticity for Cylinders Under Torsion Applied by Cylindrical Shells (Z. A. Davtyan, S. M. Mkhitarian; IZVESTIYA AKADEMII NAUK ARMYANSKOY SSR: MEKHANIKA, No 3, Mar 84).....	47
Form of Zero-Moment Equal Strength Shell of Minimum Mass (A. M. Timonin; INVESTIYA AKADEMII NAUK SSSR: MEKHANIKA TVERDOGO TELA, No 3, May-Jun 84).....	48
Spectrum of Normal Waves in Cylindrical Shell (N. A. Losin, A. M. Protsenko; INVESTIYA AKADEMII NAUK SSSR: MEKHANIKA TVERDOGO TELA, No 3, May-Jun 84)....	48
Stability of Cylindrical Shells With One-Way Constraints (A. N. Yeremichev; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: MASHINOSTROYENIYE, No 1, Jan 84).....	49
Nonlinear Behavior and Stability of Thin Spherical Shells Subjected to Nonaxisymmetrical Loading (L. A. Shapovalov, V. N. Semenov; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: MASHINOSTROYENIYE, No 1, Jan 84)....	49
NAVIGATION AND GUIDANCE SYSTEMS	
Analysis of Interaction of Dynamically Adjustable Gyroscopes on Elastic Platform by Finite-Element Method (A. V. Zbrutskiy, S. A. Sarapulov; PRIKLADNAYA MEKHANIKA, No 6, Jun 84).....	51
Analytical Design of Chronometers (A. M. Kuritskiy; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: PRIBOROSTROYENIYE, No 3, Mar 84).....	51
Investigation of Dynamics of Gyrocompass in Torsion Suspension (R. Kh. Bashirov; INVESTIYA AKADEMII NAUK SSSR: MEKHANIKA TVERDOGO TELA, No 2, Feb 84).....	52
Forces and Perturbing Moments Acting Upon Rotor of Cryogenic Gyroscope (A. I. Vorob'yev, Yu. M. Urman; INVESTIYA AKADEMII NAUK SSSR: MEKHANIKA TVERDOGO TELA, No 2, Feb 84).....	52
Regression Estimates of Parameters of Mathematical Model of Rolling Gyrocompass by Least-Squares Method (A. E. Potemkin; INVESTIYA AKADEMII NAUK SSSR: MEKHANIKA TVERDOGO TELA, No 2, Feb 84).....	53

Estimation of Gyroscope Drift as Function of Phase Angle of Rotating Magnetic Field of Synchronous Gyro motor (B. A. Delektorskiy, I. V. Novozhilov; INVESTIYA AKADEMII NAUK SSSR: MEKHANIKA TVERDOGO TELA, No 2, Feb 84).....	53
Asymptotically Pendulum Movements of Hess-Appelrot Gyroscope (Yu. P. Varkhalev, G. V. Gorr; PRIKLADNAYA MATEMATIKA I MEKHANIKA, No 3, May-Jun 84).....	54
Vibration Stabilization of Lagrange Gyroscope (G. M. Rozenblat; PRIKLADNAYA MATEMATIKA I MEKHANIKA, No 3, May-Jun 84).....	54
NON-NUCLEAR ENERGY	
Reducing Labor-Intensiveness of Removal of Dovetailed Turbine Blading Stages (Ya. S. Urintsev, V. P. Timofeyev, et al.; ENERGETIK, No 4, Apr 84).....	55
Accelerated Cooldown of Individual Steam Turbines (A. I. Tugov, V. V. Kulichikhin; ENERGETIK, No 6, Jun 84) ..	55
Operating Modes of Chelyabinsk TETs-1 for Minimum Heat Demand During Summer Season (V. P. Voronin, S. N. Lipatnikov, et al.; ENERGETIK, No 6, Jun 84).....	56
Experience With Vibration Diagnostics of Feedwater Pumps in 250 MW and 300 MW Power Turbine Plants (S. I. Mikunis; ENERGETIK, No 6, Jun 84).....	57
Stress-Strained State of Runner in Medium-Pressure Stage of K-200-300 LMZ Turbine Under Various Operating Conditions (L. K. Belevtseva, V. I. Berlyand, et al.; TEPLOENERGETIKA, No 6, Jun 84).....	57
Outlook for Use of Diffusers in Exhaust System of Steam Turbines (A. Ye. Zaryankin; TEPLOENERGETIKA, No 6, Jun 84).....	58
Effect of Impurities in Vapor on Formation of Liquid Phase in Turbines (O. A. Povarov, V. S. Rabenko, et al.; TEPLOENERGETIKA, No 6, Jun 84).....	59
NUCLEAR ENERGY	
Reconstruction of VVR-K Reactor (F. M. Arinkin, G. A. Batyrbekov, et al; INVESTIYA AKADEMII NAUK KAZAKHSKOY SSR: SERIYA FIZIKO-MATEMATICHESKAYA, No 6, Jun 83).....	60

New Method for Measuring β -Decay Cross Section in Reactor Experiment at Rovno Nuclear Power Plant (S. N. Belen'kiy, Y. L. Dobrynnin, et al.; YADERNAYA FIZIKA, No 1(7), Jan 84).....	69
Kola AES - Leading Enterprise of Electric Power Generating Industry (B. A. Trofimov, ENERGETIK, No 4, Apr 84).....	69
Protective Valve for Stuffing-Sealing Boxes in AES With RBMK-1000 Water-Graphite Channel Reactor Units (M. O. Fudeman; ENERGETIK, No 4, Apr 84).....	70
Experience in Use of Crimped Contact Joints for Conductor Cores of Inspection Cables in AES (A. Yu. Tenyakov, V. P. Lavrinenko, et al.; ENERGETIK, No 5, May 84).....	70
'RITM' Rig for Overhaul of Channel Reactors (A. Ya. Shvets, K. I. Khamidulov; ENERGETIK, No 6, Jun 84).....	71
Estimation of Pressures in AES Compartments During Coolant Leakage (E. V. Lifshits, Yu. V. Rzheznikov; TEPLOENERGETIKA, No 6, Jun 84).....	72
Determining Temperature Characteristics of Steam Separators-Superheaters During Testing of Turbine Sets in AES (O. I. Chaban, M. G. Teplitskiy, et al.; TEPLOENERGETIKA, No 6, Jun 84).....	72
More Efficient Blow-Off of Steam Generators in AES With Water-moderated Water-cooled Power Reactor (L. A. Siryapina, T. Kh. Margulova; TEPLOENERGETIKA, No 6, Jun 84).....	73
<hr/>	
TESTING AND MATERIALS	
Measurement of Shunting Resistances of Cavity Resonators and Delay Systems (A. A. Zavadsev, B. V. Zverev, et al.; PRIBOR I TEKHNIKA EKSPERIMENTA, No 2, Mar-Apr 84).....	74
Synthesis of Suboptimum Control With Incomplete Measurement for Systems With Distributed Parameters (A. A. Baloyev; IZVESTIYA VYSSHIX UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84)	75

Synthesis of Optimum Electric Energy Distribution System for Aircraft by Computer-Aided Design (V. S. Tereshchuk; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84).....	76
Generalized Control for Attenuation of Water Hammer (V. V. Bernikov, O. F. Dolgova, et al.; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84).....	76
Device for Measuring Current and Energy of Electron Bunches (A. D. Stepanov; PRIBORY I TEKHNIKA EKSPERIMENTA, No 2, Mar-Apr 84).....	77
TURBINE AND ENGINE DESIGN	
Lobar Mixer of Turbofan Engine (A. B. Ageyev, B. I. Mamayev; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84).....	79
Efficiency of Algorithms for Gas-Air Channel Diagnostics in Gas Turbine Engines Based on Gas Thermodynamic Parameters (A. M. Akhmedzyanov, K. F. Galiullin; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84).....	80
Predicting Life of All-Metal Vibration Isolators Made of Metal Wire-Mesh (A. I. Belousov, A. A. Troynikov; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84).....	80
Effect of Compliability of Hot Walls in Liquid-Propellant Engine on Low-Frequency Instability (A. I. Ganichev; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84).....	81
Exergetical Analysis of Turbojet Engine Cycle (K. A. Malinovskiy; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84).....	81

Energy Losses at Leading Edge of Turbine Blade During Multirow Jet Cooling (V. V. Rumyantsev, I. P. Makov; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar).....	82
Experimental Determination of Optimum Ratio of Runner Blade Height at Exit to Runner Blade Height at Entrance of Radial Inward-Flow Microturbines (N. T. Tikhonov, A. N. Tikhonov, et al.; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84).....	83
Some Unique Features in Operation of Two-Stage Turbojet Engine With Afterburner (B. D. Fishbeyn; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84).....	83
Hydrodynamic Simulation of Transient Processes in Injection System of Aircraft Engines During Pump Unswirling (V. V. Chervakov, N. S. Yershov, et al.; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84).....	84
Effect of Water Injection Into Air for Turbine Cooling on Economy of Operation of Gas Turbine Engine With Afterburning (G. M. Gorelov, V. P. Danil'chenko, et al.; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84).....	85
Pressure Drop and Coefficients of Internal Heat Transfer Necessary for Transpiration Cooling (S. G. Dezider'yev, A. G. Karimova, et al.; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84).....	85
Annular Groove in Compressor Casing as Device for Control of Air Stream (V. N. Yershov, A. P. Yefimenko, et al.; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84).....	86
Experimentally Determined Characteristics of Vortex Heaters (Sh. A. Piralishvili, N. N. Novikov; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84).....	86
Mathematical Modeling of Transient Performance of Gas Turbine Engine (Yu. A. Skvortsov; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84).....	87

Dependence of Combustion of Homogeneous Kerosene-Air Mixtures on Humidity of Air
 (V. A. Sychenkov, V. M. Yankovskiy;
 IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY:
 AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84)..... 87

Effect of Gas Stream Sweeping Past the Effluent of a Perforated Plate on Heat Transfer Inside the Perforations
 (V. A. Trushin, K. M. Iskakov, et al.;
 IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY:
 AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84)..... 88

Liquid Turbine Generator as High-Temperature Auxiliary to Gas Turbines
 (N. A. Sherfhnev, A. N. Sinenkov, et al.;
 TEPLOFIZIKA VYSOKIKH TEMPERATUR, No 3, May-Jun 84)..... 89

Selection of Air Intake Parameters for Supersonic-Flow Operation
 (V. I. Bazhanov, A. A. Stepchkov.;
 IZVESTIYA VISSHikh UCHEBNYKH ZAVEDENIY: AVIATSIONNAYA TEKHNIKA, No 1, Jan-Mar 84) 89

Estimation of Gas Turbine Engine Boost Provided by Injecting Water Behind Compressor
 (A. N. Prokof'yev, Yu. A. Chumakov; IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY: MASHINOSTROYENIYE, No 4, Apr 84).... 90

15 May 1985

**USSR REPORT
ENGINEERING AND EQUIPMENT**

CONTENTS

MARINE AND SHIPBUILDING

Automation of Ship Control on Basis of Satellite Communications and Navigation Systems (A. V. Likhachev, Ye. V. Yakshevich; SUDOSTROYENIYE, No 9, Sep 84).....	1
Passenger Riverboat-Hovercraft 'Luch' (V.K. Zoroastrov, V.N. Tsipershteyn; SUDOSTROYENIYE, No 9, Sep 84).....	2
Electrical Propulsion Systems with Counterspinning Double-Rotor Motor for Drive of Coaxial Propeller Pair (S.A. Alekseyev; SUDOSTROYENIYE, No 9, Sep 84).....	2
Comparative Evaluation of Reversing Characteristics of Turbogear and Turboelectric Propeller Drives (V.A. Gulyy, M.Ya. Lekakh; SUDOSTROYENIYE, No 7, Jul 84).....	3
Questions on the Unification of Screw Propellers (G.G. Martirosov, A.D. Domarev; SUDOSTROYENIYE, No 7, Jul 84).....	4

NUCLEAR ENERGY

Gas Supply System for 35-cm ³ Liquid Tritium Target (V.M. Bystritskiy, Ya. Voznyak, et al.; PRIBORY I TEKHNIKA EKSPERIMENTA, No 4, Jul-Aug 84).....	5
---	---

NON-NUCLEAR ENERGY

High-Altitude Testing of Selective Optical Coatings for Solar Radiators and Collectors (M.I. Umarova; IZVESTIYA AKADEMII NAUK TADZHIKSOY SSR OTDELENIYE FIZIKO-MATEMATICHESKIKH, FIZICHESKIKH I GEOLOGICHESKIKH NAUK, No 1 (91), Jan-Mar 84).....	6
Selective Coatings for Solar Heat Converters (M.I. Umarova; IZVESTIYA AKADEMII NAUK TADZHIKSOY SSR OTDELENIYE FIZIKO-MATEMATICHESKIKH, FIZICHESKIKH I GEOLOGICHESKIKH NAUK, No 2 (92), Apr-Jun 84).....	6
Cost Estimation and Cost Reduction of Solar Collector for Solar Heating System (M.I. Valov, V.A. Astashenko, et al.; GELIOTEKHNIKA, No 3, Mar 84).....	7
Choice of Optimum Surface for Intermediate Heat Exchanger in Dual-Loop Solar System (V. K. Aver'yanov, A.I. Tyuttyunnikov; GELIOTEKHNIKA, No 3, Mar 84).....	8
Structural Optimization of Control System of Solar Powerplant Heliostat Field (D. Berzh, V.V. Malyshko, et al.; GELIOTEKHNIKA, No 3, Mar 84).....	8
Thermodynamic Analysis of Some Promising Chemical Reactions for Heat Storage at Solar Powerplants (R. B. Akhmedov, V.A. Pozharnov, et al.; GELIOTEKHNIKA, No 3, Mar 84).....	9
Investigation of Conical Concentrates with Axial Receiver (O.I. Kudrin, V. P. Volodin, et al.; GELIOTEKHNIKA, No 3, Mar 84).....	9
Transfer Function of Optical Sensor in Solar Radiation Flux Spatial Stabilization System (A. G. Kostyukovskiy; GELIOTEKHNIKA, No 3, Mar 84)....	10
Facet Spraying for Solar Concentrators (A. V. Kondratov, A. A. Potapenko; GELIOTEKHNIKA, No 3, Mar 84).....	10
Accumulation of Heat by Low-Temperature Melt (M. M. Poberezhnyuk, S. A. Kudrya, et al.; GELIOTEKHNIKA, No 3, Mar 84).....	11

New Switching Materials for Solar Thermal Converters Based on Bismuth and Tin Chalcogenides (K. Sh. Kakhramanov, V. A. Mazur, et al.; GELIOTEKHNIKA, No 3, Mar 84).....	11
Investigation of Solar Flat-Plate Thermal Elements (N. S. Lidorenko, O. P. Astakhov, et al.; GELIOTEKHNIKA, No 3, Mar 84).....	12
Flat Magnetohydrodynamic Induction Pump (Ya. Ya. Valdmanis, R. R. Krishberg, et al.; MAGNITNAYA GIDRODINAMIKA, No 4, Oct-Dec 84).....	12
Dependence of Characteristics of Centrifugal Magnetohydrodynamic Conduction Pump on Electrical Conductance of End Walls, Part 1: Experiment (V. A. Gorbunov, A. A. Klyukin, et al.; MAGNITNAYA GIDRODINAMIKA, No 4, Oct-Dec 84).....	13
Error of Parametric Reliability of Magnetohydrodynamic Pump (Yu. P. Agafonov; MAGNITNAYA GIDRODINAMIKA, No 4, Oct-Dec 84).....	14
Dependence of Characteristics of Magnetohydrodynamic Induction Pump on Electrical Conductance of Channel Walls (B. N. Siplivyy, V. F. Petrov; MAGNITNAYA GIDRODINAMIKA, No 4, Oct-Dec 84).....	14
Labor Efficient Design Schemes for Foundations Under Large Turbine Sets (P. M. Sverdlov; ENERGETICHESKOYE STROITEL'STVO, No 8, Aug 84).....	15
Flexible Foundations for Thermalized 100 MW Turbines (Ye.G. Babskiy, L.V. Il'in; ENERGETICHESKOYE STROITEL'STVO, No 8, Aug 84).....	15
INDUSTRIAL TECHNOLOGY	
Precision Optical Method for Oriented Crystal Cutting (B.A. Matveyev, N.M. Stus', et al.; OPTIKO-MEKHANICHESKAYA PROMYSHLENNOST', No 6, Jun 84).....	17
Design Method for Solid State Cryogenic Coolers (I.M. Pilat, V.S. Zinov'ev, et al.; OPTIKO-MEKHANICHESKAYA PROMYSHLENNOST', No 6, Jun 84).....	17
Interface Controller for Elektronika-DZ-28 Microcomputer and MT 1016 Numeric Printer (A.A. Abyzov, V.V. Pakhomov; PRIBORY I TEKHNIKA EKSPERIMENTA, No 4, Jul-Aug 84).....	18

Automated System for Controlling Heat Treatment of Nuclear Powerplant Articles (N. G. Afanasiadi, V.P. Demin, et al.; ENERGOMASHIN-OSTROYENIYE, No 7, Jul 84).....	18
Reliability of Automatic Control Systems for Technological Research (Yu.G. Zarenin, V.I. Kutovoy; IZMERENIYA, KONTROL', AVTOMATIZATSIYA, No 1(49), 1984).....	19
Vibrations of Rotors Connected Through Couplings with Backlash (E.L. Poznyak, G.P. Mayorov; MASHINOSTROYENIYE, No 5, Sep-Oct 84).....	19
Dynamic Characteristics of Drive with Closed-Loop Self-Braking Servomechanism (V.L. Veyts, I.A. Gidashev; MASHINOSTROYENIYE, No 5, Sep-Oct 84).....	20
Damping Systems for Random Vibratory Action (G.V. Kostin, V.I. Konychev, et al.; MASHINOVEDENIYE, No 5, Sep-Oct 84).....	20
Ultimate Capabilities and Efficiency of Resonance-Type Machines (M.Ye. Gerts; MASHINOVEDENIYE, No 5, Sep-Oct 84).....	21
Nonlinear Flexural Vibrations of Working Members in Machines with Dual Drive Mechanisms (I.I. Vul'fson; MASHINOVEDENIYE, No 5, Sep-Oct 84).....	22
Stability of Thrasher Bearings with Profile on Bushing or Shaft Surface (O.N. Tikhonenkova; MASHINOVEDENIYE, No 5, Sep-Oct 84)...	22
Heat Exchanges for Utilizing Low-Grade Heat of Fan Exhaust Air (Ye.P. Volkov; PROMYSHLENNAYA ENERGETIKA, No 9, Sep 84) ..	23
TURBINE ENGINE DESIGN	
Reliability of Vacuum Deaeration Installations in TETs (V. I. Sharapov; ELEKTRICHESKIY STANTSII, No 7, Jul 84).....	24
Adjustment and Operation of Regulating Systems for Type K-800-240-3 LMZ Turbines (V. V. Shakalo; ELEKTRICHESKIY STANTSII, No 7, Jul 84)...	24

Design of Disk Spring for Automatic Disk Safety Device (P.A. Rybin, K. B. Sarantsev, et al.; ENERGOMASHINOSTROYENIYE, No 7, Jul 84).....	25
Erosion of Working Vanes of Auxiliary Turbines (A. V. Semenyuk, A. G. Reznik; ENERGOMASHINOSTROYENIYE, No 7, Jul 84).....	25
Determination of Size and Weight Requirements of Gas Turbine Installation from Cycle Parameters (S. P. Zaritskiy, A. G. Vertepov; ENERGOMASHINOSTROY- ENIYE, No 7, Jul 84).....	26
Characteristics of Design of Turbine Stages with Tangential Inclination of Guide Vanes (A. I. Kirillov, Ya. A. Sirotkin, et al.; ENERGOMASHINOSTROYENIYE, No 7, Jul 84).....	26
Precision Die Forging of Blades for Gas Turbines (E. G. Shastin; ENERGOMASHINOSTROYENIYE, No 8, Aug 84).....	27
Stressed-Strained State of Tightening Buckles in Sectional Runners of Gas Turbines (I.K. Bakumenko, N.A. Kulakovskaya; ENERGOMASHIN- OSTROYENIYE, No 9, Sep 84).....	27
Experience with Vibration Testing and Balancing of Rotors of Large Hydraulic Units (I.R. Solov'ev; GIDROTEKHNICHESKOYE STROITEL'STVO, No 9, Sep 84).....	28
Experience with Operation and Repair of Hydraulic Turbine Impeller Chamber (M.I. Gal'perin, I.I. Shiro, et al.; GIDROTEK- HNICHESKOYE STROITEL'STVO, No 9, Sep 84).....	29
High-Temperature Fluidic Turbogenerator as Attachment to Gas Turbine (N.A. Shershnev, A.N. Sinenkov, et al.; TEPLOFIZIKA VYSOKIKH TEMPERATUR, No 3, May-Jun 84).....	29
Experimental Study of Two-Stage Turbine Bleeder with Transition Nozzle Between Stages (I.G. Gogolev, R.V. Kuz'michev, et al.; TEPLOENERGETIKA, No 7, Jul 84).....	30
Calculation of Friction at Spherical Bearing Journals in Turbomachines (G. A. Khanin, L.G. Khanin; TEPLOTEKHNIKA, No 10, Oct 84).....	31

Erosion of Turbine Runner Blades (V.V. Pryakhin, O.A. Povarov, et al.; TEPLOENERGETIKA, No 10, Oct 84).....	31
HIGH-ENERGY DEVICES, OPTICS, PHOTOGRAPHY	
Video Monitor Device for Electron Microscope (E.P. Bocharov, B.I. Pilenko; OPTIKO-MEKHANICHESKAYA PROMYSHLENNOST', No 6, Jun 84).....	33
Unpolarized Radiation Modulator Based on Lead Zirconate- Titanate Ceramic with Lanthanum (A. M. Sosenskiy, N.N. Kazantseva, et al.; OPTIKO- MEKHANICHESKAYA PROMYSHLENNOST', No 6, Jun 84).....	33
Technological Process for Manufacturing Multifaceted Prisms (A.I. Zhdanov; OPTIKO-MEKHANICHESKAYA PROMYSHLENNOST', No 6, Jun 84).....	34
Investigation of Influence of Polishing Conditions on Surface Roughness of Glasses of Different Composition (S.V. Kryukova, S.V. Yeremina, et al.; OPTIKO- MEKHANICHESKAYA PROMYSHLENNOST', No 6, Jun 84).....	34
Investigation of Automatic Stabilization System for Composite Mirrors of Adaptive Telescope (V.I. Kryukov, A.K. Rodionov, et al.; OPTIKO- MEKHANICHESKAYA PROMYSHLENNOST', No 6, Jun 84).....	35
Self-Scanning MDS-Integrated Photodetector Strip (Yu.Kh. Kagan, E.L. Kashcheyev, et al.; AVTOMETRIYA, No 3, May-Jun 84).....	36
Self-Scanning MDS Integrated Photosensor Strip (Yu. Kh. Kagan, E. L. Kashcheyev, et al.; AVTOMETRIYA, May-Jun 84).....	37
Holographic Intensity Correlator with Pris-type Photo- electrooptical Controllable Transparency (A.N. Oparin, O.I. Potaturkin, et al.; AVTOMETRIYA, No 3, May-Jun 84).....	48
Holographic Intensity Correlator with Pris-type Photoelectric- Optical Controlled Transparency (A.N. Oparin, O.I. Potaturkin, et al.; AVTOMETRIYA, May-Jun 84).....	49
Design Method for Telescopic System Consisting of Thin Element and Finite-Thickness Lens (V.V. Tarabukin; OPTIKO-MEKHANICHESKAYA PROMYSHLENNOST', No 6, Jun 84).....	55

Analysis of Thermooptical Abberrations of Focusing Mirrors (G.I. Pogodin, E.V. Truneva, et al.; OPTIKO-MEKHANICHESKAYA PROMYSHLENNOST', No 6, Jun 84).....	55
Molecular Lamination of Titanium Oxygen Layers and their Influence on the Chemical Stability of Optical Glass (V.A. Tolmachev, M.A. Okatov, et al.; OPTIKO-MEKHANICHESKAYA PROMYSHLENNOST', No 6, Jun 84).....	56
High-Angular-Resolution Spectrometer with Dual Neutron Beam Monochromatization (Yu. Abov, F.G. Kulidzhanov, et al.; PRIBORY I TEKHNIKA EKSPERIMENTA, No 4, Jul-Aug 84).....	56
Diana 700-Liter Xenon Bubble Chamber (V.V. Barmin, V.N. Borisov, et al.; PRIBORY I TEKHNIKA EKSPERIMENTA, No 4, Jul-Aug 84).....	57
Laser System for Holographic Recording of Information From Track Detector (Ye. Bartke, I.Ts. Ivanov, et al.; PRIBORY I TEKHNIKA EKSPERIMENTA, No 4, Jul-Aug 84).....	57
Electronic Equipment Test System for Multichannel Drift Chambers (V.V. Karpukhin; PRIBORY I TEKHNIKA EKSPERIMENTA, No 4, Jul-Aug 84).....	58
Spectral Properties of Variable-Focus Membrane Mirror (V.V. Motoshkin, S.M. Slobodyan; PRIBORY I TEKHNIKA EKSPERIMENTA, No 4, Jul-Aug 84).....	58
Fiber-Optic Modulators (A.V. Kukhta, Ye.I. Sverchkov, et al.; PRIBORY I TEKHNIKA EKSPERIMENTA, No 4, Jul-Aug 84).....	59
Small Low-Noise Microwave-Pumped He-Ne Laser (V.M. Geller, G.I. Grif, et al.; PRIBORY I TEKHNIKA EKSPERIMENTA, No 4, Jul-Aug 84).....	59
Circuit for Synchronizing Radiation from Two LTI-5 Lasers (V.I. Belousov, S.V. Chernyakov, et al.; PRIBORY I TEKHNIKA EKSPERIMENTA, No 4, Jul-Aug 84).....	60
Device for Pulse-Amplitude Modulation of Laser Radiation Power (B.A. Zverev, S.V. Pakhomov, et al.; PRIBORY I TEKHNIKA EKSPERIMENTA, No 4, Jul-Aug 84).....	60
Wide-Beam Electron Gun (Yu.V. Grigor'yev, V.I. Perevodchikov, et al.; PRIBORY I TEKHNIKA EKSPERIMENTA, No 4, Jul-Aug 84).....	61

Automatic Scanning Manipulator for Mass Spectrometer Employing Laser-Plasma Ion Source (A.I. Busygin, V.V. Drozdov, et al.; PRIBORY I TEKHNIKA EKSPERIMENTA, No 4, Jul-Aug 84).....	61
Light Splitter Based on Three-Dimensional Holographic Diffrac- tion Grating (N.G. D'yachenko, V.Ye. Mandel', et al.; PRIBORY I TEKHNIKA EKSPERIMENTA, No 4, Jul-Aug 84).....	62
High Speed Spectrophotometer for Measuring Spectral Charac- teristics of Optical Coating During Preparation in Vacuum (D.Ye. Yefremov, L.I. Zelikman, et al.; PRIBORY I TEKHNIKA EKSPERIMENTA, No 4, Jul-Aug 84).....	62
High Frequency System of JINR Proton Synchrotron for Light Nucleus Acceleration (O.I. Brovko, A.I. Mikhaylov, et al.; PRIBORY I TEKHNIKA EKSPERIMENTA, No 4, Jul-Aug 84).....	63
Continuous Electron Accelerator Employing Secondary Ion- Electron Emission (M.A. Abroyan, N.A. Uspenskiy, et al.; PRIBORY I TEKHNIKA EKSPERIMENTA, No 4, Jul-Aug 84).....	64
Steady-State Source of Negative Hydrogen Ions with Hollow Cathode (S.P. Antipov, L.I. Yelizarov, et al.; PRIBORY I TEKHNIKA EKSPERIMENTA, No 4, Jul-Aug 84).....	64
Design and Heater Characteristics of Thermoemission Cathode for Microtron (E.A. Luk'yanenko, Yu.Ye. Tokarev, et al.; PRIBORY I TEKHNIKA EKSPERIMENTA, No 4, Jul-Aug 84).....	65
Acousto-Optical Cells for Deflecting Radiation of Semi- conductor Laser (Yu.N. Tishchenko, A.V. Trubetskoy; AVTOMETRIYA, No 3, May-Jun 84).....	65
Use of Semiconductor Lasers in Holographic Correlators (S.M. Borzov, O.I. Potaturkin; AVTOMETRIYA, No 3, May-Jun 84).....	66
Enhancing Accuracy of Diffraction Methods for Dimension Testing (R.M. Bychkov, B.Ye. Krivenkov, et al.; AVTOMETRIYA, No 3, May-Jun 84).....	66

Investigation of Speed of Optical Information Converter Based on MF-16 Integrated Photodetector Array (V.M. Komarov; AVTOMETRIYA, No 3, May-Jun 84).....	67
Diffraction Interferometer (V.P. Koronkevich, G.A. Lenkova; AVTOMETRIYA, No 3, May-Jun 84).....	67
Acousto-Optical Modulator with Counter Acoustic Beams on Optically Active Uniaxial Crystal (V.A. Tarkov, Yu.N. Tishchenko, et al.; AVTOMETRIYA, No 3, May-Jun 84).....	68
Automatic Device for Recording Digital Data Hologram Matrices (A.A. Blok, B.V. Vanyushev, et al.; AVTOMETRIYA, No 3, May-Jun 84).....	68
Hybrid Optoelectronic Systems for Inspection and Automatic Classification of Images (N.S. Rozin'kov; IZMERENIYA, KONTROL', AVTOMATIZATSIIA, No 1(49), 1984).....	69
Automatic Measurement of Fast Processes with Aid of Time-Scale Conversion (Yu.A. Golovastikov, S.G. Rabinovich, et al.; IZMERENIYA, KONTROL', AVTOMATIZATSIIA, No 1(49), 1984)...	70
Investigation of Possibilities of Fabricating Lightweight Thin Light-Focusing Mirrors (G. Ya. Umarov, A.K. Alimov, et al.; GELIOTEKHNIKA, No 3, Mar 84).....	71
Optimization of Cathode Lenses with 'Efir' Applied Program Package (V.P. Il'in, V.A. Kateshov, et al.; AVTOMETRIYA, No 5, Sep-Oct 84).....	71
Linear Model of MOS-Integrated Photodiode-Type Multielement Optical Signal Converters (S.I. Naymark; AVTOMETRIYA, No 5, Sep-Oct 84).....	72
Structure of Photometric Channel in High-Speed Microdensitometer and Errors of Photometric Measurement (V.P. Kosykh; AVTOMETRIYA, No 5, Sep-Oct 84).....	73
Production of Optical Fiber Bundles with Equalization of Illuminance at Exit (V.I. Shashin, V.A. Gurenko; OPTIKO-MEKHANICHESKAYA PROMYSHLENNOST', No 7, Jul 84).....	74

Use of Varnished Polyethylene Terephthalate Film as Trans- illuminated Screen (G.P. Lenisyuk, G.Ya. Solov'yev, et al.; OPTIKO- MEKHANICHESKAYA PROMYSHLENNOST', No 7, Jul 84).....	74
Protective Characteristics of Electrically Conducting Trans- parent Vacuum-Deposited Coatings (B.P. Krzhizhanovskiy; OPTIKO-MEKHANICHESKAYA PROMYSHLENNOST', No 7, Jul 84).....	75
Dependence of Telescope - Observer Resolving Power on Shape and Size of Front Iris (V.Ya. Vasil'yev, V.P. Dubenskov, et al.; OPTIKO- MEKHANICHESKAYA PROMYSHLENNOST', No 7, Jul 84).....	75
Matching Characteristics of Graded-Index Optical Fibers in Splice (S.N. Avakov, M.G. Zguladze, et al.; OPTIKO- MEKHANICHESKAYA PROMYSHLENNOST', No 7, Jul 84).....	76
Color Transmission by Camera Objectives with Achromatic Trans- parency Coatings (G.D. Pridatko, N.P. Yevteyeva, et al.; OPTIKO- MEKHANICHESKAYA PROMYSHLENNOST', No 7, Jul 84).....	76
Model AShS-15 Automatic Machine Tool for Diamond Grinding of Optical Components (A.F. Roshak, E.T. Samuylov, et al.; OPTIKO- MEKHANICHESKAYA PROMYSHLENNOST', No 7, Jul 84).....	77
Holographic Corrector in Objective with Compound Main Mirror (Yu.D. Pimenov, Yu.Ye. Kuzilin, et al.; OPTIKO- MEKHANICHESKAYA PROMYSHLENNOST', No 7, Jul 84).....	78
Performance Evaluation of Fiber-Optic Converters (M.A. Farakhutdinova, N.T. Suleymanov; OPTIKO- MEKHANICHESKAYA PROMYSHLENNOST', No 7, Jul 84).....	78
FLUID MECHANICS	
Planar Particle-Laden Gas Flow About Thin Bodies (R.R. Aydagulov; DOKLADY AKADEMII NAUK SSSR, No 2, Jul 84).....	80
Characteristics of Steady-State Hypersonic Flow About Blunted Bodies with Discontinuities in Generators (V.D. Serova; VESTNIK LENINGRADSKOGO UNIVERSITETA: MATEMATIKA MEKHANIKA ASTRONOMIYA, No 3, Jun 84).....	80

Impact Starting of Plane Nozzles with Wide Divergence Angle (A.B. Britan, Ye. I. Vasil'yev; IZVESTIYA AKADEMII NAUK SSSR: MEKHANIKA ZHIDKOSTI I GAZA, No 4, Jul-Aug 84).....	81
Buildup of Oscillation of Bodies in Stratified Fluid (I.S. Dolina; IZVESTIYA AKADEMII NAUK SSSR: MEKHANIKA ZHIDKOSTI I GAZA, No 4, Sep-Oct 84).....	81
Supersonic Flow Around Blunt Wedge (S.V. Manuylovich; IZVESTIYA AKADEMII NAUK SSSR: MEKHANIKA ZHIDKOSTI I GAZA, No 4, Jul-Aug 84).....	82
Propulsion Efficiency of Vibrating Bodies in Subsonic Gas Stream (M.N. Kogan, M.V. Ustincv; IZVESTIYA AKADEMII NAUK SSSR: MEKHANIKA ZHIDKOSTI I GAZA, No 4, Jul-Aug 84).....	83
Stefan-Maxwell Relations for Plasma Diffusion Currents in Magnetic Field (A.F. Kolesnikov, G.A. Tirskiy; IZVESTIYA AKADEMII NAUK SSSR: MEKHANIKA ZHIDKOSTI I GAZA, No 4, Jul-Aug 84).....	83
Method of Calculating Separation Flow of Subsonic Gas Stream Around Wings (S.M. Belotserkovskiy, V.N. Korzhnev, et al.; IZVESTIYA AKADEMII NAUK SSSR: MEKHANIKA ZHIDKOSTI I GAZA, No 4, Jul-Aug 84).....	84
Supersonic Flow Around Weak Radiation Sources (K.V. Krasnobayev; IZVESTIYA AKADEMII NAUK SSSR: MEKHANIKA ZHIDKOSTI I GAZA, No 4, Jul-Aug 84).....	85
MECHANICS OF SOLIDS	
Elastic Equilibrium of Composite Shells with Finite Shear Rigidity (Ya. M. Grigorenko, I.S. Mukha, et al.; DOKLADY AKADEMII NAUK UKRAINSKOY SSR: SERIYA A FIZIKO-MATEMATICHESKIYE I TEKHNICHESKIYE NAUKI, No 7, Jul 84)....	86
Stability of Cylindrical Shells with Variable Thickness under External Pressure (V.V. Kabanov, L.P. Zhelezov; PRIKLADNAYA MEKHANIKA, No 7, Jul 84).....	86
Natural Vibrations of Reinforced Spherical Shells (V.N. Revutskiy; PRIKLADNAYA MEKHANIKA, No 7, Jul 84)....	87
Numerical Solution of One-Dimensional Nonlinear Problems of Statics for Elastic Beams and Shells under Rigid Constraints (S.A. Kabrits, V.P. Terent'yev; PRIKLADNAYA MEKHANIKA, No 7, Jul 84).....	88

Method of Solving Problems of Statics for Multilayer Shells of Revolution (B.G. Popov, E.V. Raman; PRIKLADNAYA MEKHANIKA, No 7, Jul 84).....	89
Scattering of Sounds by Piezoceramic Cylindrical Shell Near Rigid Surface (I.V. Senchenko; PRIKLADNAYA MEKHANIKA, No 7, Jul 84)....	90
Propagation of Non-Axisymmetric Elastic Waves Through Shell with Filler Under Radial Load at One End (Yu.V. Mastinovskiy, Yu.I. Nagornyy; PRIKLADNAYA MEKHANIKA, No 7, Jul 84).....	90
An Approximate Method for Solving the Heat Conductivity Problem for a Hollow Cylinder (S.Yu. Yusupov; IZVESTIYA AKADEMII NAUK TADZHIKSOY SSR OTDELENIYE FIZIKO-MATEMATICHESKIKH, FIZICHESKIKH I GEOLOGICHESKIKH NAUK, No 1(91), Jan-Mar 84).....	91
Acoustic Oscillations of Rods and Plates (A.V. Zakharov, A.R. Fazylov, et al.; IZVESTIYA AKADEMII NAUK TADZHIKSOY SSR OTDELENIYE FIZIKO-MATEMATICHESKIKH, FIZICHESKIKH I GEOLOGICHESKIKH NAUK, No 2 (92), Apr-Jun 84).....	92
TESTING & MATERIALS	
Clamping Devices for Circular Instrumentation Transducers (B.N. Ivanov; OPTIKO-MEKHANICHESKAYA PROMYSHLENNOST', No 6, Jun 84).....	93
Practical Application of 'Grounding Effect' (M.A. Sultanov; IZVESTIYA AKADEMII NAUK TADZHIKSOY SSR OTDELENIYE FIZIKO-MATEMATICHESKIKH, FIZICHESKIKH I GEOLOGICHESKIKH NAUK, No 1 (91), Jan-Mar 84).....	93
NMR Manometer for Measuring High Pressures at Liquid-Helium Temperatures (V.D. Doroshev, N.M. Kovtun, et al.; PRIBORY I TEKHNIKA EKSPERIMENTA, No 4, Jul-Aug 84).....	94
Technology for Producing Synthetic Iron for Nuclear Power Plant Parts (N.K. Blozhko, Petrov, et al.; ENERGOMASHINOSTROYENIYE, No 7, Jul 84).....	95
Principles of Designing Digital Compensating Accelerometers (A.I. Skalon; IZMERENIYA, KONTROL', AVTOMATIZATSIYA, No 1(49), 1984).....	95

Uniaxial Angular Accelerometers (A.V. Seleznev; IZMERENIYA, KONTROL', AVTOMATIZATSIIA, No 1(49), 1984).....	96
Technological Apparatus for Laser Treatment of Materials (A.V. Kirillin, A.V. Kostanovskiy, et al.; TEPLOFIZIKA VYSOKIKH TEMPERATUR, No 6, May-Jun 84).....	97
Apparatus for Measuring Velocity of Sound in Fluids (D.L. Timrot, M.A. Serednitskaya, et al.; TOPLOFIZIKA VYSOKIKH TEMPERATUR, No 3, May-Jun 84).....	98
Liquid-Metal Transducers for Strain Measurement During In-Pile Materials Testing (V.A. Neverov, Yu.L. Revyakin; ATOMNAYA ENERGIYA, No 5, Nov 84).....	98